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Bluetooth Beacons

Innovative Bluetooth® Low Energy Technology Devices for Location Solutions

Zebra Bluetooth® Beacons are built upon Bluetooth low energy technology and operate in conjunction with commercial Android®/iOS® devices or custom devices to form the foundation of easily deployable proximity-based location solutions.

Bluetooth-based Location Technology

There are many different location technologies on the market today. Bluetooth is a proximity-based location technology that integrates easily with mobile device-based applications or with server-based location solutions. It's a low-cost, active RFID technology that allows for extremely fast installation, even in fairly complex environments, like warehouses, factories, and hospitals. Zebra Bluetooth Beacons feature a variety of physical and digital configurations to provide presence and proximity-based location data as part of solutions like Zebra MotionWorks™. When general location information (down to a small zone or room) is all that is needed to solve your business problem, Bluetooth is the ideal technology and a tremendous value.

The low power consumption of Bluetooth low energy technology is the catalyst for battery-powered devices that can be used to create innovative solutions for industries including manufacturing, transportation and logistics, healthcare and retail. Location data from the edge of the network provides valuable information about how your operation is actually performing. The battery-operated active beacons can run for multiple years at cost points that are compelling.

Zebra Bluetooth Beacon-based solutions generally include a combination of fixed and/or mobile beacons combined with some type of application receiving and acting upon the beacon information. The system can be a stand-alone application that uses these beacons, or used in conjunction with Zebra MotionWorks solutions. The bridge device (that hears the beacons) can be almost any type of Android or iOS mobile computer or smartphone, or a custom device that has a Bluetooth low energy radio and is running the Zebra SDK or third-party application. As part of a location solution like Zebra MotionWorks, the application must also have the ability to communicate with the analytics software (i.e. Wi-Fi, LTE, 3G etc.).

Compatible with Zebra MotionWorks and 3rd party Location Solutions

Zebra MotionWorks location solutions give businesses the ability to use automated data collection to attain actionable insights and vital solutions from the location, state and sense data of tagged enterprise resources. By using hardware to capture data (including Zebra's many sensing, tagging, and mobility technologies, as well as popular third-party technologies), MotionWorks deploys some of the world's largest and most successful automated resource tracking and management solutions— across industries, and for some the world's largest companies.

Zebra's MotionWorks solutions have been optimized for operation with Zebra Bluetooth Beacons, but these beacons will also work with third-party solutions that follow the Bluetooth low energy specification. They are also compatible with legacy MPact server based solutions.

Development and Configuration Tools

Zebra has a software development kit (SDK) to help customers and partners create location solutions based on Zebra Bluetooth Beacons, and to enable easy integration of Zebra Bluetooth Beacons with the location features of iOS and Android smart phones as well as Zebra's portfolio of ruggedized mobile computing devices. The SDK has the library, driver and application programming interface (API) that can form the foundation supporting custom application development. Additionally, Zebra provides a toolbox application to simplify the staging and configuration of beacons. This application allows the selection of transmit power, transmitter interval, and other operating parameters. Configuration and beacon firmware updates are performed over-the-air without a physical connection with the beacon.

Bluetooth Beacon Specifications

MB1000 – ASSET BEACON
These small, coin cell beacons are ideal for asset tracking and have been optimized for long battery life within industrial environments. They have ultra-low RF transmit powers for increased locate accuracy and improved performance in high density deployments. The MB1000 is constructed of materials that withstand common industrial cleaning agents.

Wireless	Bluetooth 4.1 (Bluetooth Low Energy Technology)
Modes	Battery Save, iBeacon and MPact
Beacon Interval	Configurable 100 ms to 10 sec
Dimensions	1.46" x 1.06" x 0.44" (Including VHB Tape) 1.81" (46 mm) x 1.06" (27 mm) x 0.52" (13.1 mm) (Including VHB Tape attached to optional lanyard accessory)
Battery	Fixed CR2032 220 mAh
Transmit Power	-7 dBm to -30 dBm (EIRP) configurable
Antenna Type	Omni directional
Operating Temp.	32° F to 104° F/0° C to 40° C
Estimated Operational Life	Estimated 2-yr battery life at 2 sec Tx interval Estimated 5-yr battery life at 5 sec Tx interval
Weight	8 g
Bluetooth Frequency	2.4GHz
Bluetooth Security	128 bit AES
On / Off switch	Integrated and sealed on/off switch; single LED with blink patterns for status
Installation Options	Pre-installed 3M™ VHB™ industrial tape
Cleaning	Tested for a lifetime of cleaning with 15 common cleaning agents
Regulatory	EMI/EMC (FCC/EU), safety (UL), and Medical EMC (IEC 60601-1-2)

MB2000 INDOOR BEACON
Built to easily attach to retail or warehouse shelving, this beacon runs off two, replaceable AA batteries ensuring an extended operating life.

Wireless	Bluetooth 4.1 (Bluetooth Low Energy Technology)
Modes	Battery Save, iBeacon and MPact
Beacon Interval	Configurable in 100 ms intervals
Dimensions	3.12" x 1.76" x 0.96"
Battery	Two replaceable, standard AA batteries
Transmit Power	-3 dBm to -26 dBm (EIRP) configurable
Antenna Type	Directional antenna with 120° beamwidth
Operating Temp.	32° F to 104° F / 0° C to 40° C
Estimated Operational Life	Battery Save mode: about 3 yr @ 200ms iBeacon mode: about 1 yr @ 100ms MPact mode: about 2 yr @ 200ms Securecast™ about 2 yr @ 200ms
Weight	86 g
Bluetooth Frequency	2.4 GHz
Bluetooth Security	128 bit AES
LED	Yes, with blink patterns representing various modes of operation
On / Off switch	Yes
Environ. Resistance	Indoor environment
Installation Options	Sticky Tape, Secure Mounting brackets, Tie Wrap

Bluetooth Beacon Specifications (continued)

MB2001 INDOOR BEACON

These ultra-low RF transmission power beacons have 100 times lower RF transmission power than typical Bluethooth® low energy beacons. With replaceable AA batteries these beacons are optimized as location beacons in asset tracking solutions anywhere locate accuracy in dense deployments is important.

Wireless	Bluetooth 4.1 (Bluetooth Low Energy Technology)
Modes	Battery Save, iBeacon and MPact
Beacon Interval	Configurable 100 ms to 10 sec
Dimensions	3.12" x 1.76" x 0.96"
Battery	Two replaceable, standard AA batteries
Transmit Power	-23 dBm to -46 dBm (EIRP) configurable
Antenna Type	Directional antenna with 120° beamwidth
Operating Temp.	32° F to 104° F/0° C to 40° C
Estimated Operational Life	2 years with a 200 ms beacon interval
Weight	86 g
Bluetooth Frequency	2.4 GHz
Bluetooth Security	128 bit AES
LED	Yes, with blink patterns representing various modes of operation
On/Off Switch	Yes
Environ. Resistance	Indoor environment
Installation Options	Sticky Tape, Secure Mounting brackets, Tie Wrap
Cleaning	Tested for a lifetime of cleaning with 15 common cleaning agents *
Regulatory	EMI/EMC (FCC), safety (UL)

MB3000/MB3100 INDOOR BEACONS

The USB beacon is ideal wherever you have the option to provide power via a USB port or a standard AC plug (requires a USB adaptor), such as a retail kiosk computer, or USB wall socket — there is no battery to monitor or replace.

Wireless	Bluetooth 4.0 (Bluetooth Low Energy Technology)
Modes	iBeacon and MPact
Beacon Interval	Configurable in 100 ms intervals
Dimensions	0.57" x 0.27" x . 0.80"
Battery	Powered by standard USB connection (Type-A)
Transmit Power	-5 dBm to -26 dBm (EIRP) configurable
Antenna Type	OmniDirectional Antenna
Operating Temp.	32° F to 104° F / 0° C to 40° C
Estimated Operational Life	5 years
Weight	2 g
Bluetooth Frequency	2.4 GHz
Bluetooth Security	128 bit AES
LED	None
On / Off switch	Insert into USB port to power on Remove from USB port to power off
Environ. Resistance	Indoor environment
Installation Options	USB port

MB4000 OUTDOOR BEACON

This industrial beacon is sealed against the environment, operates over an extreme temperature range and is ruggedized for use in harsh industrial environments. Powerful batteries ensure a long life controlled via a simple touchpad on/off switch.

Wireless	Bluetooth 4.1 (Bluetooth Low Energy Technology)
Modes	Battery Save, iBeacon and MPact
Beacon Interval	Configurable in 100 ms intervals
Dimensions	7" x 1 7/8" x 1"
Battery	Non-replaceable Lithium Magnesium batteries
Transmit Power	-10 dBm to -36 dBm (EIRP) configurable
Antenna Type	Directional Antenna with 160 Degree Beamwidth / Downtilt
Operating Temp.	-40° F to 140° F / -40° C to 60° C
Estimated Operational Life	Battery Save mode: about 5 yr @ 200ms iBeacon mode: about 3 yr @ 100ms MPact mode: about 4 yr @ 200ms Securecast about 4 yr @ 200ms
Weight	143 gms
Bluetooth Frequency	2.4 GHz
Bluetooth Security	128 bit AES
LED	Single LED with blink patterns representing operational modes
On / Off switch	Touchpad controller with LED indicator
Environ. Resistance	IP67 (waterproof), UV resistant, and shock resistant)
Installation Options	Sticky Tape, Screws
Touchpad Controller Temperature	0°C to 60°C

Bluetooth Beacon Specifications (continued)

SB1100 – ASSET BEACON

These small, BLE 5.1 beacons have been designed specifically for healthcare and other industrial applications where long life, waterproofness, and the ability to survive routine disinfection cleaning are critical. NFC enables simple on/off control and configuration. Low RF transmit power level enables safe operation with sensitive medical devices.

Wireless	Bluetooth 5.1/4.1 (Bluetooth Low Energy Technology)
Modes	Battery Save, iBeacon, MPACT and Securecast
Beacon Interval	Configurable 100 ms to 10 sec (2 sec default)
Dimensions	1.46" (37.08 mm) x 1.06" (26.92 mm) x 0.44" (11.18 mm) (Including VHB Tape) 1.81" (46 mm) x 1.06" (27 mm) x 0.52" (13.1 mm) (Including VHB tape attached to optional lanyard accessory MB1001-01-ACC)
Battery	Fixed CR2032 220 mAh
Transmit Power	-7 dBm to -30 dBm EIRP configurable
Antenna Type	Omni directional
Operating Temp.	32° F to 104° F/0° C to 40° C
Estimated Operational Life	Estimated 2-yr battery life at 2 sec Tx interval Estimated 5-yr battery life at 5 sec Tx interval
RSSI @ 1m Per chnl.	Unique RSSI value/advertisement channel This feature is disabled by default This feature reduces battery life
Weight	8 g (0.28 oz)
Bluetooth Frequency	2.4 GHz
Bluetooth Security	128 bit AES
On / Off switch / Configuration	NFC via Zebra's MPACT Toolbox Application running on an Android device
Installation Options	Pre-installed 3M™ VHB™ industrial tape. Can be used with mounting plates.
Cleaning	Tested for a lifetime of cleaning with 15 common cleaning agents
Regulatory	EMI/EMC (FCC/EU), safety (UL), and Medical EMC (IEC 60601-1-2)
Ingress Protection	IP67 Waterproof
Package Design	Smooth conformal, medical grade plastic housing with non-absorbant, closed-cell, foam 3M™ VHB™ tape

CLIENT DEVICE SUPPORT WITH SDK

The SDK includes drivers, APIs and a sample application. This application is available from Zebra upon request

• Apple® devices running iOS 9.0 or later
• Android™ devices that support Bluetooth Smart running Android 7.0 or later

MPACT TOOLBOX

Beacons come configured in MPact mode. This application is required to change/customize beacon transmit power, transmit interval, operating mode and other configuration settings. There are two different toolbox applications: One is for the MPACT-SB2000-01-WR; the other is for all other beacons including the MPACT-SB1100-01-WR. The MPACT-SB1100-01-WR requires the toolbox application be running on an Android device with NFC. These applications are available from Zebra upon request.

Hardware	For iOS: versions 7.1 or later For Android: version 5.0 or later

MOUNTING PLATES

The following are optional accessories that can be used with Zebra's BLE beacons:

	MPACT-MB1000-01-ACC	Slotted, Mounting Plate or MB1xxx and SB1xxx device attachments to non-flat surfaces
	MPACT-MB1001-01-ACC	Wrist Mounting Plate for MB1xxx and SB1xxx device applications with up to a 1" wide wristband
	MPACT-MB2001-01-ACC	Wall Mounting Plate & Cover Kit for MB2xxx and SB2xxx devices
	MPACT-MB2002-01-ACC	RF Enhancement Plate to reduce RF energy radiating behind the MB2xxx and SB2xxx devices

The information contained herein is subject to change without notice.

For more information, visit www.zebra.com/locationtechnologies

Works with Apple iBeacon

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